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AVIONIC INERTIAL AND RADAR NAVIGATION SYSTEMS CAREER LADDER, AF--ETC(U)
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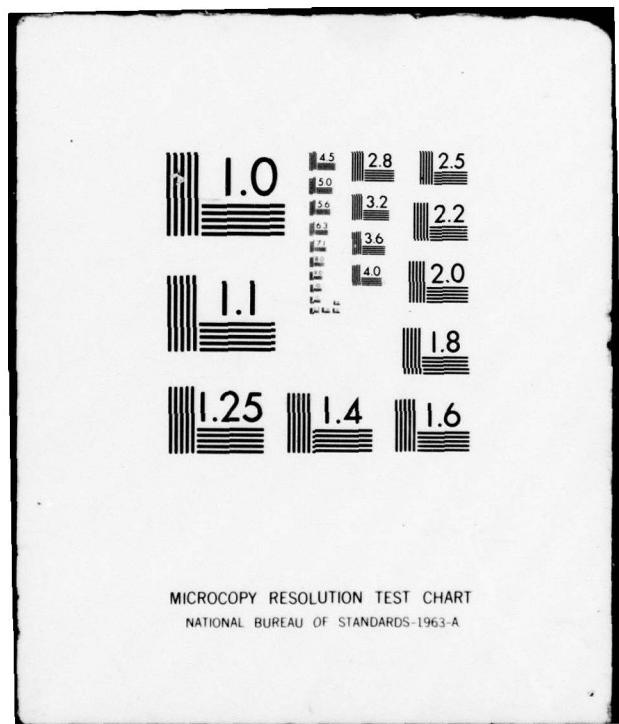


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AVIONIC INERTIAL AND RADAR NAVIGATION SYSTEMS
CAREER LADDER
AFSCs 32834, 32854, 32874, and 32894.

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OCCUPATIONAL SURVEY BRANCH
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LACKLAND AFB TEXAS 78236

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PREFACE

This report presents the results of a detailed Air Force Occupational Survey of the Avionic Inertial and Radar Navigation Systems career ladder (AFSCs 32834, 32854, 32874, and 32894). This project was directed by USAF Program Technical Training, Volume 2, dated October 1976. Authority for conducting specialty surveys is contained in AFR 35-2. Computer outputs from which this report was produced are available for use by operating and training officials.

The survey instrument was developed by Captain Loretta Lee, Inventory Development Specialist. Mr. Guy B. Cole analyzed the survey data and wrote the final report. This report has been reviewed and approved by Major Walter F. Kasper, Chief, Airman Career Ladders Analysis Section, Occupational Survey Branch, USAF Occupational Measurement Center, Lackland AFB, Texas, 78236.

Computer programs for analyzing the occupational data were designed by Dr. Raymond E. Christal, Occupational and Manpower Research Division, Air Force Human Resources Laboratory (AFHRL), and were written by the Project Analysis and Programming Branch, Computational Sciences Division, AFHRL.

Copies of this report are available to air staff sections, major commands, and other interested training and management personnel upon request to the USAF Occupational Measurement Center, attention of the Chief, Occupational Survey Branch (OMY), Lackland AFB, Texas 78236.

This report has been reviewed and is approved.

JAMES A. TURNER, JR., Col, USAF
Commander
USAF Occupational Measurement
Center

WALTER E. DRISKILL, Ph.D.
Chief, Occupational Survey Branch
USAF Occupational Measurement
Center

SUMMARY OF RESULTS

1. Survey Coverage. Inventory booklets were administered to personnel in the Avionic Inertial and Radar Navigation Systems career ladder during the period June through October 1977. Survey results are based on responses from 1,248 respondents holding DAFSCs 32834, 32854, and 32874. This represents 71 percent of the total assigned personnel. One-hundred and forty-nine superintendents also completed inventories, making a combined total of 1,397 respondents to the survey.
2. Career Ladder Structure. Six major groupings of jobs were identified within this career ladder. These groupings primarily differentiated between management, supervision, and training personnel and those involved in the day-to-day repair and maintenance of avionic navigation systems. Some specialization around type of systems was found among individuals within the systems repair group which included 53 percent of the survey respondents. Thirty-eight percent of this group specialized in the repair and maintenance of inertial navigation systems used primarily within TAC and USAFE, while 53 percent specialized on Doppler navigation systems used primarily in MAC and SAC. Specialization by off-equipment (shop) and on-equipment (flightline) maintenance, however, did not appear to be common across the systems repair group.
3. Career Ladder Progression. Three- and 5-skill level personnel primarily performed technical maintenance and repair tasks. At the 7-skill level, supervision occupied approximately 40 percent of the individual's work time; however, the 7-skill level technician continued to perform almost all of the technical tasks performed by subordinate workers. The 9-skill level includes personnel from any one of the five avionic communications-navigation systems career ladders (328X0, 328X1, 328X2, 328X3, and 328X4). At this level, managerial and supervisory tasks occupied an average of over 75 percent of the work time.
4. AFR 39-1 Evaluation. The current 328X4 specialty descriptions accurately reflect jobs performed by respondents to the survey. Tasks related to maintaining forward looking and terrain following radar systems, although covered by the survey, were transferred to personnel in the Avionic Navigation Systems career ladder, AFSC 328X1, in the 31 October 1977 revision of AFR 39-1.
5. STS Evaluation. The STS for this ladder has recently been revised to remove items referring to forward-looking/multi-mode/terrain-following radar. Consideration should be given to including such systems as adverse weather aerial delivery systems (AWADS); inertial reference systems (IRS); multi-mode radar systems (M-MRS) and velocity/heading computer systems (V/HCS). These systems are maintained by small numbers of people and should possibly be treated in the same manner as AIDS/MADAR and AINS equipment presently covered in the STS.

6. Job Satisfaction. Personnel in this ladder reflected slightly lower averages for job interest than other comparable ladders reported in CY 1977. Second enlistment personnel reported the lowest job interest of any of the enlistment groups. Similar trends were also present for perceived utilization of talents and training.

7. Comparison to Previous Occupational Survey Reports. Findings in this report were very similar to those reported in the 1971 occupational survey report for the Aircraft Inertial and Radar Navigation Systems Repair career ladder, AFSC 301X4. The career ladder structure was comparable in both studies, with essentially the same factors influencing the clustering. A significant difference noted in this survey that was not evident in the 1971 cluster analysis was the grouping of repairmen by Doppler or inertial systems.

OCCUPATIONAL SURVEY REPORT
AVIONIC INERTIAL AND RADAR NAVIGATION
SYSTEMS CAREER LADDER
(AFSCs 32834, 32854, 32874, 32894)

INTRODUCTION

This is a report of an occupational survey of the Avionic Inertial and Radar Navigation Systems career ladder (AFSCs 32834, 32854, 32874, and 32894) which was completed by the Occupational Survey Branch, USAF Occupational Measurement Center, in April 1978. A previous occupational survey of this career ladder was published in April 1971.

At the time of the last occupational survey, the career ladder was a part of the Communications-Electronic Systems Career Field, AFS 30XXX, and was designated as the Aircraft Inertial and Radar Navigation Systems career ladder, AFS 30IX4. In April 1971, the ladder was merged into the Avionics Systems career field, AFS 32XXX, and was redesignated as the Avionic Inertial and Radar Navigation Systems career ladder, AFS 328X4, with no significant changes in duties or responsibilities. In October 1977, responsibility for maintenance and repair of forward looking and terrain following radar was removed from this specialty and incorporated into the 328XI Avionics Navigation Systems career ladder. This change was effected, however, after the survey data was collected; therefore, survey results include the maintenance and repair of this equipment.

In this current survey, four primary areas were addressed: (1) development and administration of the survey instrument; (2) the job structure found within the Avionic Inertial and Radar Navigation Systems career ladder and how this relates to skill level and experience level groups; (3) comparisons of the job structure with current career ladder documents such as the AFR 39-1 Specialty Descriptions and the Specialty Training Standard (STS); and (4) comparison of the current findings with the 1971 study.

INVENTORY DEVELOPMENT AND ADMINISTRATION

The data collection instrument for this occupational survey was USAF Job Inventory AFPT 90-328-265. The task list from the 1971 study served as the starting point for development of the new task inventory. The previous task list was expanded and refined through

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a thorough research of publications and directives, personal interviews with five subject-matter specialists at two bases, and written reviews from 52 experienced Avionic Inertial and Radar Navigation Systems specialists at 26 bases. The final result was a survey instrument which consists of 239 tasks grouped under nine duty headings.

During the period June through October 1977, consolidated base personnel offices in operational units worldwide administered the inventory booklets to personnel holding an Avionic Inertial and Radar Navigation Systems DAFSC (328X4) and to 32894 Superintendents who supervised 328X4 personnel. Each individual who completed the inventory first completed an identification and biographical information section, then checked each task performed in their current job. After checking all tasks performed, each incumbent then rated each of these tasks on a 9-point scale showing relative time spent on that task as compared to all other tasks checked. The ratings ranged from 1 (very-small-amount time spent) through 5 (about-average time spent) to 9 (very-large amount time spent). To determine relative time spent for each task checked by a respondent, all an incumbent's ratings are assumed to account for 100 percent of his or her time spent on the job and are summed. Each task rating is then divided by the total task responses and the quotient multiplied by 100. This procedure provides a basis for comparing tasks not only in terms of percent members performing but also in terms of average percent time spent.

Table 1 reflects the percentage distribution, by major command, of assigned personnel in the career ladder as of July 1977. Also reflected is the distribution, by major command, of the incumbents in the final survey sample. The 1,248 respondents within this final sample represent 71 percent of the total AFSC population of 1,758.

Table 2 reflects the distribution of the survey sample in terms of DAFSC groups. As shown, over 70 percent of each skill level was sampled.

Superintendents (DAFSC 32894) were not directly included within the statistics reported in Tables 1 and 2 since they are authorized and assigned as supervisors of personnel working within any of five career ladders (328X0, 328X1, 328X2, 328X3, and 328X4). Instructions for administration of the inventory specified that only those 9-skill level personnel supervising personnel from the 328X4 career ladder should complete the survey booklet. A total of 149 superintendents supervising 328X4 personnel returned booklets and were included within the total sample on which this report is based.

TABLE 1
COMMAND REPRESENTATION OF SURVEY SAMPLE

<u>COMMAND</u>	<u>PERCENT OF ASSIGNED</u>	<u>PERCENT OF SAMPLE</u>
TAC	28	27
MAC	27	27
SAC	17	20
USAFE	12	13
PACAF	7	5
ATC	5	4
AFSC	2	2
AAC	1	1
OTHER	<u>1</u>	<u>1</u>
	<u>100</u>	<u>100</u>

Total Assigned - 1,758*
 Total Sampled - 1,248*
 Percent of Assigned - 71%

* NOTE: DAFSC 32894 personnel were not included in these statistics.

TABLE 2
SKILL LEVEL REPRESENTATION OF SURVEY SAMPLE

<u>DAFSC</u>	<u>NUMBER ASSIGNED</u>	<u>NUMBER IN SURVEY SAMPLE</u>	<u>PERCENT OF ASSIGNED SAMPLED</u>
32834	109	81	74
32854	1,150	803	70
32874	499	359	72
32894	**	149	**

**NOTE: Nine-skill level personnel superintend work in 5 ladders (328X0, 328X1, 328X2, 328X3 and 328X4); therefore, specific authorizations are not available for each ladder.

CAREER LADDER STRUCTURE

A major function of the USAF occupational analysis program is to examine the structure of career ladders and identify the jobs being performed by incumbents in the field. This analysis is made possible by the Comprehensive Occupational Data Analysis Programs (CODAP) which generate a hierarchical clustering of all survey respondents based on the similarity of tasks performed and relative time spent on each task. This process identifies different work assignments within the ladder and, when correlated with background information, reflects the division of work within the ladder and the kinds of personnel assigned to the various jobs identified.

The basic identifying group used in the hierarchical job structuring analysis is the Job Type. A job type is a group of individuals who perform many of the same tasks and also spend similar amounts of time performing them. When there is a substantial degree of similarity between different job types, they are grouped together and labeled as Clusters. Finally, there are often cases of specialized job types that are too dissimilar to be grouped into any cluster. These fairly unique groups are labeled Independent Job Types.

The job structure of the Avionic Inertial and Radar Navigation Systems career ladder is shown in Figure 1. The major clusters and job types identified in this ladder are as follows:

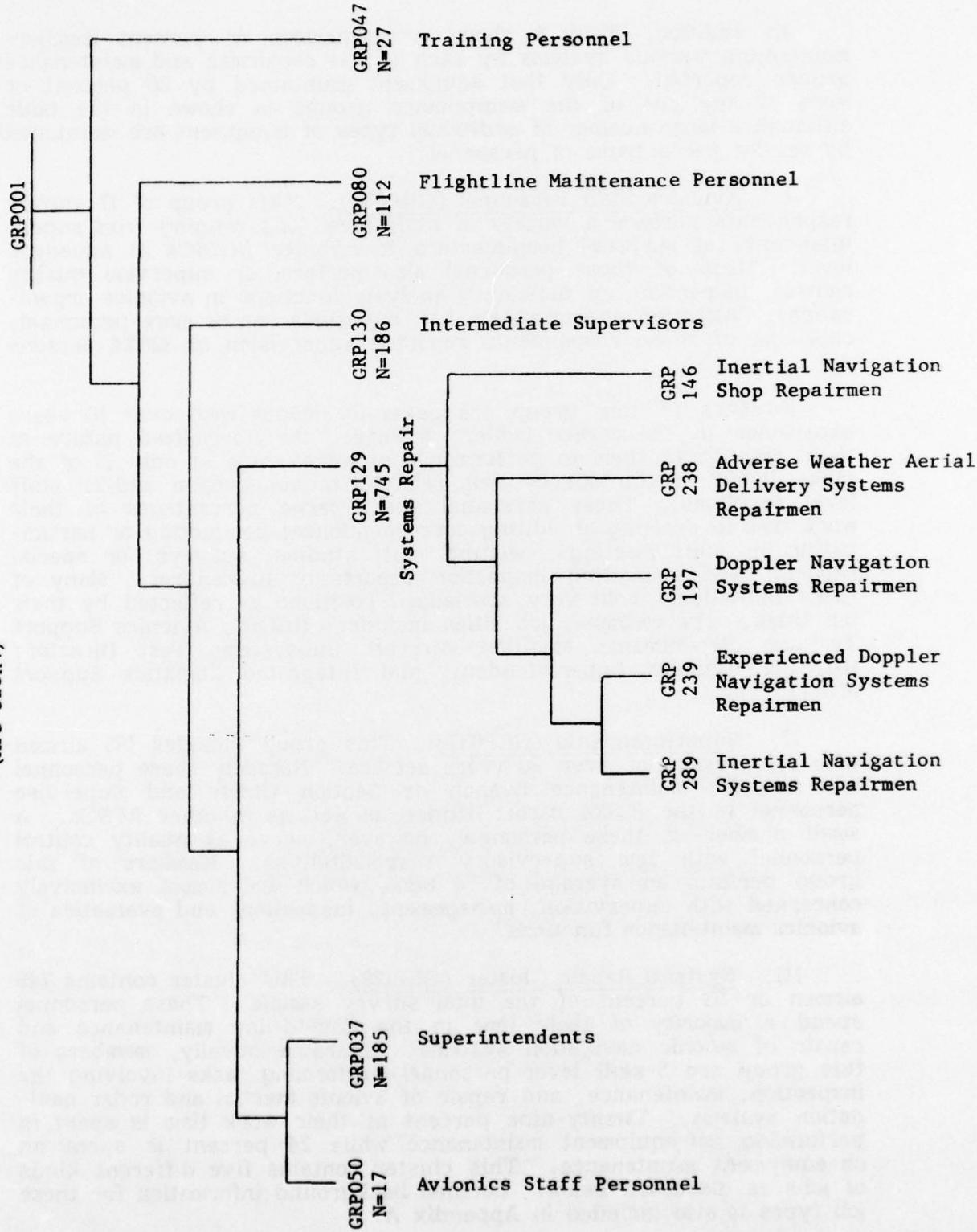
- I. Avionics Staff Personnel (GRP050, N=17)
- II. Superintendents (GRP037, N=185)
- III. Systems Repairmen (GRPI29, N=745)
- IV. Intermediate Supervisors (GRPI30, N=186)
- V. Flightline Maintenance Personnel (GRP080, N=112)
- VI. Training Personnel (GRP047, N=27)

Group Descriptions

Brief descriptions of the six major job groupings reflecting the various kinds of jobs performed by personnel in the career ladder are given below. Summaries of representative tasks and background information for these groups are included in Appendix A. The GRP numbers used in conjunction with each group in the narrative and in Appendix A are references to computer printout information (EXTRACT) forwarded to some users for additional analysis in support of classification or training decisions.

FIGURE 1

AVIONIC INERTIAL AND RADAR NAVIGATION SYSTEMS CAREER LADDER STRUCTURE DIAGRAM
(AFS 328X4)



In addition, Table 3 shows a comparison of percent members maintaining various systems by each of the repairman and maintenance groups reported. Only that equipment maintained by 20 percent or more of any one of the maintenance groups is shown in the table although a large number of additional types of equipment are maintained by smaller percentages of personnel.

I. Avionics Staff Personnel (GRP050). This group of 17 survey respondents perform a variety of staff level jobs ranging from superintendents at MAJCOM headquarters to mobility NCOICs at squadron level. Many of these personnel also perform or supervise quality control, inspection, or deficiency analysis functions in avionics organizations. Although approximately half supervise one or more personnel, only one of these respondents reported supervision of 328X4 personnel.

Members of this group are generally MSgts with over 16 years experience in the career ladder; however, the specialized nature of their jobs limits them to performance of an average of only 21 of the tasks listed in the survey, all relating to supervision and/or staff level functions. These personnel spend large percentages of their work time in drafting or editing correspondence; conducting or participating in staff meetings; writing staff studies, surveys, or special reports; and evaluating inspection reports or procedures. Many of these individuals hold very specialized positions as reflected by their job titles. For example, job titles include: NCOIC, Avionics Support Training Department; Modified Aircraft Subsystems Test Director; MAJCOM Avionics Superintendent; and Integrated Logistics Support officer.

II. Superintendents (GRP037). This group includes 185 airmen with an average of over 20 years service. Normally these personnel are Avionics Maintenance Branch or Section Chiefs and supervise personnel in the 328X4 career ladder as well as in other AFSCs. A small number of these personnel, however, serve as quality control personnel with few supervisory responsibilities. Members of this group perform an average of 74 tasks which are almost exclusively concerned with supervision, management, inspection, and evaluation of avionics maintenance functions.

III. Systems Repair Cluster (GRPI29). This cluster contains 745 airmen or 53 percent of the total survey sample. These personnel spend a majority of their time in the day-to-day maintenance and repair of avionic navigation systems. Characteristically, members of this group are 5-skill level personnel performing tasks involving the inspection, maintenance, and repair of avionic inertial and radar navigation systems. Twenty-nine percent of their work time is spent in performing off-equipment maintenance while 24 percent is spent on on-equipment maintenance. This cluster contains five different kinds of jobs as discussed below. Detailed background information for these job types is also included in Appendix A.

TABLE 3
SYSTEMS MAINTAINED BY 20 PERCENT OR MORE OF RESPONDENTS IN REPAIRMAN AND MAINTENANCE JOB TYPE GROUPS (PERCENT MEMBERS PERFORMING)*

	IIIA.	IIIB.	IIIC.	IIID.	IIIE.	V.
SYSTEM	INERTIAL NAVIGATION SYSTEMS REPAIRMEN	DOPPLER NAVIGATION SYSTEMS REPAIRMEN	DOPPLER NAVIGATION SYSTEMS REPAIRMEN	ADVERSE WEATHER AERIAL DELIVERY SYSTEMS (AWADS) REPAIRMEN	INERTIAL NAVIGATION SHOP REPAIRMEN	FLIGHTLINE MAINTENANCE PERSONNEL
<u>DOPPLER NAVIGATION SYSTEMS</u>						
APN-81	6	45	53	0	0	5
APN-89	1	21	29	0	0	1
APN-99	4	24	16	0	0	0
APN-147	11	53	33	100	17	38
C-5A SYSTEM	2	22	9	0	33	44
<u>MULTI-MODE OR FORWARD LOOKING/TERRAIN FOLLOWING RADAR SYSTEMS</u>						
APQ-99	17	2	4	0	33	6
C-5A (MULTI-MODE)	2	22	11	0	31	46
<u>GENERAL PURPOSE DIGITAL COMPUTERS</u>						
ANS-24	4	31	15	100	17	38
C-5A	1	21	9	0	28	46
<u>INERTIAL NAVIGATION SYSTEMS</u>						
ANS-48	29	2	4	0	50	5
ANS-56	22	2	2	0	44	11
ANS-63	61	1	2	0	67	41
C-5A	2	22	9	0	31	45
<u>NAVIGATIONAL COMPUTERS</u>						
ASN-6	3	29	29	0	0	0
ASN-7	5	44	55	0	0	0
ASN-35	8	49	27	89	17	38
ASN-46	78	2	2	0	61	38
<u>SPECIAL SYSTEMS</u>						
ADVERSE WEATHER AERIAL DELIVERY SYSTEMS	0	2	0	78	0	2
RADAR AIRBORNE INTEGRATED DATA SYSTEMS	28	4	4	0	14	10
OTHER	1	20	6	0	28	40

A. Inertial Navigation Systems Repairmen (GRP289).

Eighty-four percent of the 285 members of this group are assigned to TAC or USAFE. These personnel work almost exclusively on inertial navigation systems (INS), as shown in Table 3. Seventy-six percent reported that they worked on F-4 aircraft while 23 percent worked on the RF-4C. In addition, 28 percent reported that they worked on special systems not included in the inventory. Primary maintenance tasks performed include isolating malfunctions on INS system units, subassemblies, or components; aligning, adjusting, and testing minimum performance of INS units; removing units or subassemblies for off-equipment maintenance; making adjustments on installed equipment; performing preventive maintenance on INS or radar navigation systems; and performing a variety of other associated general maintenance tasks.

B. Experienced Doppler Navigation Systems Repairman (GRP239). This group of 337 members (24 percent of the survey sample) are experienced specialists in the repair and maintenance of Doppler navigation systems (DNS) and associated equipment. Eighty-six percent of this group are in MAC (45 percent) or SAC (41 percent). Specific equipment maintained by 20 percent or more of this group is shown in Table 3. Tasks performed relate primarily to the maintenance and repair of Doppler systems and include: isolating malfunctions on Doppler navigation units, unit subassemblies or components; removing units or subassemblies for off-equipment maintenance; testing operation of new or repaired units; installing new or repaired units; performing operational tests of inertial or radar navigation systems; and testing minimum performance of DNS units. In addition, group respondents also perform such tasks as making adjustments on installed equipment; programming computers; aligning or adjusting navigation computer system (NCS) units; examining or analyzing wave shapes; isolating malfunctions on NCS units, subassemblies, or components; and visually inspecting maintenance shop or support equipment (AGE).

C. Doppler Navigation Systems Repairmen (GRPI97). This group of 55 respondents average only 30 months experience in the career field, almost two years less than that of group IIIB above. Although they work on the same type of equipment and perform many of the same tasks, on the average these personnel perform fewer and less difficult tasks than the experienced Doppler navigation systems repairmen.

D. Adverse Weather Aerial Delivery Systems (AWADS) Repairmen (GRP238). This small group of nine 5-skill level personnel specialize on isolating malfunctions and aligning, adjusting, and testing the performance of adverse weather aerial delivery systems on C-130 and/or C-141 aircraft in MAC. All work on the APN-147 Doppler navigation system and the ANS-24 general purpose computer. In addition, all but one member reported that they maintained the ASN-35 navigational computer.

E. Inertial Navigation Shop Repairmen (GRPI46). The 36 airmen in this group spend approximately 40 percent of their time in performance of off-equipment maintenance of inertial navigation systems. Typical tasks include testing minimum performance, aligning and adjusting, isolating malfunctions to unit subassemblies or components, and performing preventive maintenance on inertial navigational systems. Over half of this group work in overseas organizations, mostly in PACAF. CONUS personnel are assigned primarily to MAC, with some assigned to TAC. Approximately one-third of this group work on navigational equipment used on the C-5A. Others work on navigational equipment common to F-4 and RF-4 aircraft.

IV. Intermediate Supervisors (GRPI30). This group of 186 members is composed primarily of 7-skill level personnel who supervise the day-to-day avionic navigation systems maintenance and repair functions. Typically, in addition to performing the supervisory function inherent in the operation of a shop, these personnel devote over half their time to the performance of such tasks as: visually inspecting navigation equipment; testing the operation of new or repaired systems or units; locating maintenance information in technical publications; installing, removing, and/or repairing the various systems or units; and performing a large variety of similar technical tasks.

In contrast to Superintendents (II above) who devote almost all of their work time to the supervisory and management functions, members of this group spend 58 percent of their time performing technical tasks such as off- and on-equipment maintenance, preventive maintenance, and maintenance management.

V. Flightline Maintenance Personnel (GRP080). This group of 112 personnel spend almost half of their time on flightline maintenance tasks and only 17 percent of their time on off-equipment tasks. A majority of the personnel in this group are assigned to a few organizations within MAC, TAC, or USAFE where personnel apparently are specialized on flightline or shop maintenance. This kind of specialization however, did not appear to be characteristic across the career field since in most of the other functional groups, essentially equal amounts of time were spent on off-equipment and on-equipment maintenance.

Although personnel in this group average slightly more time in service than those in the Systems Repair cluster (III above), generally the two groups are similar in terms of DAFSC, grade, time in career field, and assignment location (CONUS or overseas). Job satisfaction for these personnel was somewhat lower than for those of the Systems Repair cluster, since 53 percent of this group felt that their training was utilized little or not at all, while only 31 percent of the members in the Systems Repair cluster felt that their training was used little or not at all.

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VI. Training Personnel (GRP047). This group of 27 members is primarily composed of avionic inertial and radar navigation technicians serving as classroom instructors or instructor supervisors in various formal training courses conducted by Air Training Command (ATC). A few, however, were in specialized training jobs within their commands such as training NCO or training coordinator. Job satisfaction for this group was the highest of any in the survey, with 89 percent reporting that their job was interesting and that their training was used fairly well or better. In addition, 100 percent indicated that their talents were used fairly well or better.

General Comments

Ninety-one percent of the respondents to the survey were performing jobs roughly equivalent to those described in the six major clusters or job types listed above. The remaining nine percent of the sample included respondents whose jobs were so unique that they were not distinctly associated with any of these major groups.

The primary factors governing the grouping of jobs in the career ladder were the normal factors of management, supervision, maintenance and repair of systems, and the performance of training functions. By far, the largest percentage of respondents were maintaining and repairing avionic navigation systems (61 percent).

Within the large cluster of systems repair (Cluster III), specialization was primarily on the type of systems maintained. One group of repairmen, primarily from TAC and USAFE, worked almost exclusively on inertial navigation systems while two other groups, composed of MAC and SAC personnel, specialized in the maintenance and repair of Doppler systems.

In only two of the job groups identified in the CODAP clustering process did there appear to be specialization based on off-equipment (shop) maintenance or on-equipment (flightline) maintenance. These included the 36 personnel within the inertial navigation shop repairmen job type (III E) and the 112 individuals in the flightline maintenance personnel cluster (V). In view of the relatively small number of personnel in these two groups, this kind of specialization, although present at some operating locations, is not characteristic of most avionic inertial and radar navigation maintenance facilities.

ANALYSIS OF DAFSC GROUPS

Task and background data by DAFSC groups are also examined as part of each occupational analysis. This analysis identifies differences in tasks being performed at the various points of career ladder progression from the semi-skilled specialist (3-skill level) through the Superintendent (9-skill level). Analysis of tasks performed at each of the skill levels provides a basis for comparison of tasks performed in the field to AFR 39-1 specialty job descriptions and the STS.

Table 4 shows the relative percent time spent by skill level groups on each of the various duties in the inventory. In this survey, as in most AFSCs, personnel at the 5-skill level spend a majority of their time on the technical duties, with a shift to supervision at the 7- and 9-skill levels. It should be noted, however, that although there is a drop in relative time spent, high percentages of 7-skill level personnel continue to perform all of the technical tasks common to the 5-skill level while 9-skill level personnel perform very few of these tasks.

Skill Level Groups

In this career ladder, there are a number of tasks that are performed by respondents at all skill levels. Of the 239 tasks included in the survey, 60 tasks (one fourth of the inventory) were performed by 30 percent or more of the respondents in each of the 3-, 5-, and 7-skill levels. These typically were general maintenance tasks applicable to any of the inertial and radar navigation systems maintained by personnel of this ladder. These tasks include: inspect fuses for size or ratings; tighten screws, nuts, or bolts; measure or adjust line or power supply voltages; remove or install electronic components, parts, or assemblies; solder components; record or examine entries on aircraft maintenance inspection forms; and locate parts or stock numbers in technical publications. In addition to such general tasks, over 30 percent of the personnel at each skill level also performed such tasks as isolating malfunctions on systems units, subassemblies, or components; aligning and adjusting; and testing minimum performance of Doppler and inertial navigation systems units.

Tasks performed by 5-skill level personnel in this ladder typically involve the performance of a number of technical tasks such as the removal and installation of new or repaired units; performing operational tests of navigation equipment; isolating malfunctions on inertial or Doppler navigation system units; and performing a variety of general tasks such as cleaning or dusting; tightening screws, nuts, or bolts; visually inspecting electronic equipment, cables, or connections; completing entries on repairable items processing tags; and making entries on maintenance data collection record forms. Table 5 lists those tasks performed by 80 percent or more of this skill level group.

Most 7-skill level technicians were working as first-line supervisors performing a number of supervisory tasks. In addition, most of these personnel performed the same technical tasks as 5-skill level personnel. All tasks which were performed by 30 percent or more of the 5-skill level personnel were also performed by at least 30 percent of the 7-skill level respondents. Table 6 lists those tasks which were performed by the highest percentages of 7-skill level personnel, while Table 7 lists those tasks which best differentiate between the 5- and 7-skill levels. The data in these tables demonstrate the involvement of the 7-skill level technician in the day-to-day performance of technical tasks as well as assuming supervisory responsibilities characteristic of first-level supervisors.

The 9-skill level superintendents were normally assigned as shop or section supervisors. Eighty-two percent indicated that they supervised at least one subordinate, with a majority supervising four or more. The most common tasks performed by this group are shown in Table 8. Table 9 shows some of the most significant differences in tasks performed between 7- and 9-skill level personnel and suggests that supervision is the primary function of the superintendent's job.

TABLE 4
RELATIVE PERCENT TIME SPENT ON DUTIES BY 328X4 DAFSC GROUPS

DUTY	TOTAL (N=1397)	DAFSC SAMPLE (N=803)	DAFSC 32874 (N=359)	DAFSC 32894 (N=149)
				DAFSC 32894 (N=149)
A ORGANIZING AND PLANNING	4	1	6	15
B DIRECTING AND IMPLEMENTING	10	4	14	32
C INSPECTING AND EVALUATING	7	4	10	23
D TRAINING	5	2	9	7
E INSPECTING ELECTRONIC NAVIGATION SYSTEMS	5	4	7	7
F MAINTAINING ON-EQUIPMENT ELECTRONIC NAVIGATION SYSTEMS	20	25	14	2
G PERFORMING OFF-EQUIPMENT MAINTENANCE	21	26	15	2
H PERFORMING PREVENTIVE MAINTENANCE FUNCTIONS	13	17	10	3
I PERFORMING MAINTENANCE MANAGEMENT FUNCTIONS	15	17	15	9

TABLE 5
TASKS PERFORMED BY 80% OR MORE OF DAFSC 32854 PERSONNEL

TASK	PERCENT MEMBERS PERFORMING
H15 TIGHTEN SCREWS, NUTS, OR BOLTS	92
I21 MAKE ENTRIES ON REPAIRABLE ITEM PROCESSING TAG FORMS (AFTO FORM 350)	86
H1 CLEAN OR DUST EQUIPMENT OR COMPONENTS	86
G49 TEST OPERATION OF NEW OR REPAIRED UNITS	85
I17 MAKE ENTRIES ON MAINTENANCE DATA COLLECTION RECORD FORMS (AFTO FORM 349)	85
F27 SAFETY WIRE SYSTEMS EQUIPMENT	84
H5 INSPECT FUSES FOR SIZE OR RATING	83
F25 REMOVE OR INSTALL NEW OR REPAIRED INERTIAL OR RADAR SYSTEM UNITS	83
F26 REMOVE UNITS OR SUBASSEMBLIES FOR OFF-EQUIPMENT MAINTENANCE	82
H6 INVENTORY OR MAINTAIN TOOL KITS	82
F20 PERFORM OPERATIONAL TESTS ON INERTIAL OR RADAR NAVIGATION SYSTEMS	81
H7 LOCATE MAINTENANCE INFORMATION IN TECHNICAL PUBLICATIONS	81
G15 INSTALL DUST COVERS	80

TABLE 6
TASKS PERFORMED BY 70% OR MORE OF DAFSC 32874 PERSONNEL

PERCENT MEMBERS PERFORMING	TASK
83	E8 VISUALLY INSPECT ELECTRONIC EQUIPMENT, INTERCONNECTING CABLES, OR CONNECTIONS
81	C22 WRITE AIRMAN PERFORMANCE REPORTS (APR)
79	I17 MAKE ENTRIES ON MAINTENANCE DATA COLLECTION RECORD FORMS (AFTO FORM 349)
77	H5 INSPECT FUSES FOR SIZE OR RATING
74	H7 LOCATE MAINTENANCE INFORMATION IN TECHNICAL PUBLICATIONS
74	R1 INSPECT COMPLETED JOBS
74	B27 SUPERVISE AVIONIC INERTIAL AND RADAR NAVIGATION SYSTEMS
74	B3 COUNSEL SUBORDINATES ON PERSONAL OR MILITARY-RELATED PROBLEMS
73	H6 INVENTORY OR MAINTAIN TOOL KITS
72	C20 INSPECT TOOL KITS
71	I6 LOCATE PARTS OR STOCK NUMBERS IN TECHNICAL PUBLICATIONS
71	H15 TIGHTEN SCREWS, NUTS, OR BOLTS
71	I30 RESEARCH OR IDENTIFY PARTS USING ILLUSTRATED PARTS BREAKDOWNS (IPB)
70	F21 POST OR EXAMINE ENTRIES ON AIRCRAFT MAINTENANCE OR INSPECTION FORMS

TABLE 7

TASKS WHICH MOST CLEARLY DIFFERENTIATE BETWEEN DAFSC 32854 AND 32874 PERSONNEL
(PERCENT MEMBERS PERFORMING)

	<u>TASK</u>	<u>DAFSC 32854</u>	<u>DAFSC 32874</u>	<u>DIFFERENCE</u>
B1	BRIEF PERSONNEL ON MAINTENANCE MANAGEMENT DIRECTIVES OR PROCEDURES	12	64	52
B27	SUPERVISE AVIONIC INERTIAL AND RADAR NAVIGATION SYSTEM SPECIALISTS (AFSC 32854)	29	74	45
D15	MAINTAIN TRAINING RECORDS, CHARTS, OR GRAPHS	17	57	40
A12	PLAN OR SCHEDULE WORK ASSIGNMENTS	22	61	39
B2	CONDUCT OR PARTICIPATE IN STAFF MEETINGS	6	45	39
C5	EVALUATE COMPLIANCE WITH WORK STANDARDS	13	50	37
D2	CONDUCT JOB PROFICIENCY TRAINING	15	51	36
C12	EVALUATE MAINTENANCE OR USE OF WORKSPACE, EQUIPMENT, OR SUPPLIES	7	42	35
A9	ESTIMATE REQUIREMENTS FOR TOOLS, PARTS, OR EQUIPMENT	17	51	34
C9	EVALUATE INSPECTION REPORTS OR PROCEDURES	5	38	33
A1	ASSIGN PERSONNEL TO DUTY POSITIONS	12	43	31
C18	EVALUATE WORK SCHEDULES	10	41	31
B23	INITIATE CORRECTIVE ACTIONS BASED ON MAINTENANCE INSPECTIONS OR REPORTS	19	50	31
D20	SELECT PERSONNEL TO ATTEND TRAINING PROGRAMS	3	33	30
A7	ESTABLISH REQUIREMENTS FOR MAINTENANCE OF EQUIPMENT OR FACILITIES	7	35	28
C16	EVALUATE SUGGESTIONS	4	32	28

TABLE 8
TASKS PERFORMED BY 80% OR MORE OF DAFSC 32894 PERSONNEL

TASK	PERCENT MEMBERS PERFORMING
B12 DRAFT OR EDIT CORRESPONDENCE	91
B2 CONDUCT OR PARTICIPATE IN STAFF MEETINGS	88
B1 BRIEF PERSONNEL ON MAINTENANCE MANAGEMENT DIRECTIVES OR PROCEDURES	88
B3 COUNSEL SUBORDINATES ON PERSONAL OR MILITARY-RELATED PROBLEMS	88
B24 INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	85
C22 WRITE AIRMAN PERFORMANCE REPORTS (APR)	85
B25 INTERVIEW NEWLY ASSIGNED PERSONNEL	85
A1 ASSIGN PERSONNEL TO DUTY POSITIONS	83
C9 EVALUATE INSPECTION REPORTS OR PROCEDURES	80
C12 EVALUATE MAINTENANCE OR USE OF WORKSPACE, EQUIPMENT, OR SUPPLIES	80

TABLE 9
TASKS WHICH MOST CLEARLY DIFFERENTIATE BETWEEN DAFSC 32874 AND 32894 PERSONNEL
(PERCENT MEMBERS PERFORMING)

TASK	DAFSC 32874		DAFSC 32894	DIFFERENCE
	DAFSC 32874	DAFSC 32894		
F25 REMOVE OR INSTALL NEW OR REPAIRED INERTIAL OR RADAR SYSTEM UNITS	65	10	+55	
G33 REMOVE OR INSTALL ELECTRONIC COMPONENTS, PARTS, OR ASSEMBLIES	66	11	+55	
G49 TEST OPERATION OR NEW OR REPAIRED UNITS	69	15	+54	
F20 PERFORM OPERATIONAL TESTS ON INERTIAL OR RADAR NAVIGATION SYSTEMS	67	17	+50	
G53 VERIFY REPORTED MALFUNCTIONS IN SYSTEM UNITS	63	18	+45	
G13 EXAMINE OR ANALYZE WAVE SHAPES	53	11	+42	
F9 ISOLATE MALFUNCTIONS ON INERTIAL NAVIGATION SYSTEMS (INS) UNITS	48	8	+40	
G42 TEST MINIMUM PERFORMANCE OF INS UNITS	46	8	+38	
B30 SUPERVISE MILITARY PERSONNEL WITH AFSC OTHER THAN AFSC 32874	19	70	-60	
B16 IMPLEMENT COST REDUCTION PROGRAMS	16	66	-50	
C11 EVALUATE LAYOUTS OF FACILITIES	18	65	-47	
A10 PLAN LAYOUTS OF FACILITIES	18	62	-44	
A4 ESTABLISH ORGANIZATIONAL POLICIES, OFFICE INSTRUCTIONS (OI), OR STANDING OPERATING PROCEDURES (SOP)	29	73	-44	
B17 IMPLEMENT EMERGENCY OR DISASTER PLANS	12	55	-43	
A13 PLAN OR SCHEDULE WORK ASSIGNMENTS	24	63	-39	

ANALYSIS OF AFMS GROUPS

In general, the gradual shift in emphasis from technical tasks to supervision, as reflected in the DAFSC analysis, is also found across AFMS groups. Airmen in their first enlistment perform an average of 54 tasks. These are primarily concerned with the daily routine of accomplishing avionic inertial and radar navigation equipment maintenance. The six technical tasks shown in Table 10 are typical of those performed by high percentages of the first enlistment group. Note that most of these tasks are also performed by a high percentage of the career ladder members through the fourth enlistment, with a decrease in percent members performing at the fifth enlistment period. Very few of the most senior personnel performed these tasks.

During the second through fourth enlistments, personnel in this ladder continue to perform general maintenance and repair tasks. During this period, however, they also assume the more specialized technical tasks and first-level supervisory responsibility as represented by tasks shown under the Supervision-Specialized Technical section of Table 10. Tasks which are representative of second-line supervision or higher levels of management are shown on the lower portion of the table. Characteristically, these tasks are performed by personnel who have at least 20 years service.

In summary, airmen in this career ladder perform a number of technical tasks throughout their career. Although supervisory responsibilities tend to become important during the second enlistment and increase with experience, the performance of technical tasks is still a major part of the avionic inertial and radar navigation technicians job even through the fifth enlistment.

TABLE 10

COMPARISON OF TYPICAL TASKS PERFORMED ACROSS AFMS GROUPS
(PERCENT MEMBERS PERFORMING)

	<u>1ST ENLISTMENT</u>	<u>2ND ENLISTMENT</u>	<u>3RD ENLISTMENT</u>	<u>4TH ENLISTMENT</u>	<u>5TH ENLISTMENT</u>	<u>6TH+ ENLISTMENT</u>
<u>GENERAL TECHNICAL TASKS</u>						
F27 SAFETY WIRE SYSTEMS EQUIPMENT	87	79	79	63	49	16
F26 REMOVE UNITS OR SUBASSEMBLIES FOR OFF-EQUIPMENT MAINTENANCE	85	80	72	65	47	17
F6 ISOLATE MALFUNCTIONS ON DOPPLER NAVIGATION SYSTEM (DNS) UNITS	56	59	58	48	33	13
F9 ISOLATE MALFUNCTIONS ON INERTIAL NAVIGATION SYSTEM (INS) UNITS	56	61	57	50	35	14
G4 ALIGN OR ADJUST DNS UNITS	37	44	42	36	21	6
G7 ALIGN OR ADJUST INS UNITS	54	51	52	44	34	10
<u>SUPERVISION-SPECIALIZED TECHNICAL TASKS</u>						
D6 DEMONSTRATE PROCEDURES FOR LOCATING TECHNICAL INFORMATION	15	38	47	48	58	37
G34 SERVICE PECULIAR CATEGORY II TEST EQUIPMENT	24	23	40	36	29	10
D2 CONDUCT JOB PROFICIENCY TRAINING	7	23	50	49	46	30
B27 SUPERVISE AVIONIC INERTIAL AND RADAR NAVIGATION SYSTEMS SPECIALISTS (AFSC 328X4)	13	47	78	70	58	36
E3 MAKE ENTRIES ON INSPECTION SYSTEMS FORMS	23	29	53	59	59	52
F22 PROGRAM COMPUTERS	24	39	35	34	23	6
<u>MANAGEMENT TASKS</u>						
B16 IMPLEMENT COST REDUCTION PROGRAMS	3	9	17	32	54	54
C9 EVALUATE INSPECTION REPORTS OR PROCEDURES	2	7	25	38	57	76
C11 EVALUATE LAYOUTS OF FACILITIES	2	3	8	17	34	58
B28 SUPERVISE AVIONIC INERTIAL AND RADAR NAVIGATION SYSTEMS TECHNICIANS (AFSC 328X4)	1	2	21	47	58	61
B30 SUPERVISE MILITARY PERSONNEL WITH AFSCs OTHER THAN AFSC 328X4	2	5	8	17	39	74
B12 DRAFT OR EDIT CORRESPONDENCE	3	4	9	15	17	37

ANALYSIS OF TASK DIFFICULTY

From a listing of airmen identified for the 328X4 job survey, incumbents in the 7- and 9-skill levels from various commands and locations were selected to rate the relative difficulty of each task in the inventory compared to the other tasks. Tasks were rated on a nine-point scale from extremely low to extremely high difficulty, with difficulty defined as the length of time required for an average incumbent to learn to perform the task. Interrater reliability (as assessed through components of variance of standardized group means) for the 72 raters was .98. Ratings were adjusted so that tasks of average difficulty had ratings of 5.00.

Of the 239 tasks in the inventory, 129 were rated above average in difficulty. Of these, 21 were performed by 40 percent or more of the survey respondents. These tasks are shown in Table 11.

Isolating malfunctions and aligning and adjusting systems or components were normally considered as the most difficult kinds of tasks listed in the inventory. Three of the four most difficult tasks concerned isolation of malfunctions on Forward-Looking/Terrain Following radar systems and their subassemblies and components and aligning or adjusting these systems. These tasks, however, have now been transferred to the 328X1 career ladder. The next most difficult tasks pertained to isolation of malfunctions on multi-mode radar systems (M-MRS) and alignment and adjustment of M-MRS units. Isolation of malfunctions and alignment and adjustment of such units as Velocity/Heading Computer Systems (V/HCS), Airborne Integrated Data Systems (AIDS), Adverse Weather Aerial Delivery Systems (AWADS), Maintenance Analysis Detection and Recording Systems (MADARS), Astro-Inertial Navigation Systems (A-INS), Inertial Reference Systems (IRS), Weapons Release Computers (WRCS), and General Purpose Digital Computer Systems (GPDCS) were also listed as difficult tasks; however, relatively low percentages of respondents were found to be performing these tasks.

Of the 108 tasks rated as less than average difficulty, 14 were performed by 70 percent or more of the survey respondents. These tasks are listed in Table 12. Many of the tasks with the lowest task difficulty indexes were general tasks performed by relatively high percentages of the survey respondents. Although a few involved routine cleaning, painting, or lubrication tasks, most were related to the inspection, maintenance, or repair of electronic components or were routine administrative or supervisory activities in support of these tasks. These tasks appeared to be relatively equally distributed across the various DAFSC and AFMS groups rather than being concentrated at the lower levels.

TABLE 11
TASKS RATED ABOVE AVERAGE IN DIFFICULTY WHICH WERE PERFORMED
BY 40 PERCENT OR MORE OF THE SURVEY RESPONDENTS*

TASKS	DIFFICULTY INDEX	PERCENT MEMBERS PERFORMING
F9 ISOLATE MALFUNCTIONS ON INERTIAL NAVIGATION SYSTEM (INS) UNITS	6.26	50
G23 ISOLATE MALFUNCTIONS TO INS UNIT SUBASSEMBLIES OR COMPONENTS	6.22	44
G7 ALIGN OR ADJUST INS UNITS	6.16	46
C22 WRITE AIRMAN PERFORMANCE REPORTS (APR)	6.01	45
F13 ISOLATE MALFUNCTIONS ON NAVIGATION COMPUTER SYSTEM (NCS) UNITS	5.91	42
G14 FABRICATE OR SERVICE TEST BENCH MOCK-UPS	5.82	49
F6 ISOLATE MALFUNCTIONS ON DOPPLER NAVIGATION SYSTEM (DNS) UNITS	5.72	49
F31 TEST INERTIAL OR RADAR NAVIGATION SYSTEMS USING CATEGORY II SUPPORT EQUIPMENT	5.68	57
B3 COUNSEL SUBORDINATES ON PERSONAL OR MILITARY-RELATED PROBLEMS	5.68	43
D13 INSTRUCT PERSONNEL ON EQUIPMENT MAINTENANCE OR REPAIR TECHNIQUES	5.63	42
B4 DEVELOP OR IMPROVE WORK METHODS OR PROCEDURES	5.63	41
G13 EXAMINE OR ANALYZE WAVE SHAPES	5.48	54
G42 TEST MINIMUM PERFORMANCE OF INS UNITS	5.40	45
D3 CONDUCT ON-THE-JOB TRAINING (OJT)	5.40	43
G53 VERIFY REPORTED MALFUNCTIONS IN SYSTEM UNITS	5.36	63
F16 MAKE ADJUSTMENTS ON INSTALLED EQUIPMENT	5.36	63
G48 TEST OPERATION OF BENCH CHECK EQUIPMENT	5.35	53
G49 TEST OPERATION OF NEW OR REPAIRED UNITS	5.32	74
F20 PERFORM OPERATIONAL TESTS ON INERTIAL OR RADAR NAVIGATION SYSTEMS	5.31	71
B26 SUPERVISE APPRENTICE AVIONIC INERTIAL AND RADAR NAVIGATION SYSTEMS SPECIALISTS (AFSC 32834)	5.29	41
G31 OPERATE CATEGORIES II OR III TEST EQUIPMENT	5.10	57

* AVERAGE DIFFICULTY = 5.00

TABLE 12

TASKS RATED BELOW AVERAGE IN DIFFICULTY WHICH WERE PERFORMED
BY 70 PERCENT OR MORE OF THE SURVEY RESPONDENTS*

TASKS	DIFFICULTY INDEX	PERCENT MEMBERS PERFORMING	
		G15	H15
I15 INSTALL DUST COVERS	2.25	70	
H15 TIGHTEN SCREWS, NUTS, OR BOLTS	2.49	78	
H1 CLEAN OR DUST EQUIPMENT OR COMPONENTS	2.64	72	
H5 INSPECT FUSES FOR SIZE OR RATING	3.00	76	
H6 INVENTORY OR MAINTAIN TOOL KITS	3.08	74	
F27 SAFETY WIRE SYSTEMS EQUIPMENT	3.47	71	
I21 MAKE ENTRIES ON REPAIRABLE ITEM PROCESSING TAG FORMS (AFTO FORM 350)	3.88	76	
I17 MAKE ENTRIES ON MAINTENANCE DATA COLLECTION RECORD FORMS (AFTO FORM 349)	4.30	78	
I16 LOCATE PARTS OR STOCK NUMBERS IN TECHNICAL PUBLICATIONS	4.33	72	
E8 VISUALLY INSPECT ELECTRONIC EQUIPMENT, INTERCONNECTING CABLES, OR CONNECTIONS	4.34	76	
F26 REMOVE UNITS OR SUBASSEMBLIES FOR OFF-EQUIPMENT MAINTENANCE	4.35	70	
H7 LOCATE MAINTENANCE INFORMATION IN TECHNICAL PUBLICATIONS	4.50	74	
F25 REMOVE OR INSTALL NEW OR REPAIRED INERTIAL OR RADAR SYSTEM UNITS	4.67	70	
F29 TEST CONTINUITY OF AIRCRAFT CABLES OR WIRES	4.74	70	

* AVERAGE DIFFICULTY = 5.00

Job Difficulty

Having computed the task difficulty index for each inventory item, it is possible to also compute the Job Difficulty Index (JDI) for groups identified in the survey analysis. This index provides a relative measure of which jobs, when compared to other jobs identified, are more or less difficult. The JDI is based on an equation using the number of tasks performed and the average difficulty per unit time spent. The index ranks jobs on a scale of 1 for very easy jobs to 25 for very difficult jobs. The indices are then adjusted so that the average job difficulty index is 13.00. The JDI was computed for the job groups identified in the career ladder structure and are shown on Table 13.

These data show that the Intermediate Supervisor job was the most difficult job in the career ladder. Two factors contributed to this difficulty. First, intermediate supervisors performed many of the more difficult technical tasks such as isolating malfunctions and aligning and adjusting navigation systems or components, plus a number of the more difficult supervisory tasks such as directing shop maintenance activities, writing airmen performance reports, and instructing on maintenance or repair techniques. Second, and more important, however, was that this group performed an average of 121 tasks (47 tasks more than Superintendents, the next most difficult job). This large variety of tasks performed was a major factor in the high job difficulty index for this group. Although Avionics Staff Personnel performed tasks which were of relatively high difficulty, the Job Difficulty Index was lower than the supervisory groups due to the small average number of tasks performed by personnel in these jobs.

Job difficulty differences between the nonsupervisory repairmen and maintenance job groups were primarily governed by the average number of tasks performed rather than differences in the difficulty of tasks performed. Although training personnel on the average perform fewer tasks than personnel in most of the maintenance and repair jobs, the higher average difficulty of tasks performed by these personnel resulted in a higher job difficulty index.

TABLE 13
JOB DIFFICULTY INDICES FOR CAREER LADDER GROUPS

<u>GROUP</u>	<u>JOB DIFFICULTY INDEX</u>
I. AVIONICS STAFF PERSONNEL (GRP050)	11.0
II. SUPERINTENDENTS (GRP037)	16.0
III. SYSTEMS REPAIR CLUSTER (GRP129)	12.5
A. INERTIAL NAVIGATION SYSTEMS REPAIRMEN (GRP289)	12.8
B. EXPERIENCED DOPPLER NAVIGATION SYSTEMS REPAIRMEN (GRP239)	13.2
C. DOPPLER NAVIGATION SYSTEMS REPAIRMEN (GRP197)	8.0
D. ADVERSE WEATHER AERIAL DELIVERY SYSTEMS (AWADS) REPAIRMEN (GRP238)	11.9
E. INERTIAL NAVIGATION SHOP REPAIRMEN (GRP146)	10.3
IV. INTERMEDIATE SUPERVISORS (GRP130)	18.6
V. FLIGHTLINE MAINTENANCE PERSONNEL (GRP080)	9.8
VI. TRAINING PERSONNEL (GRP047)	13.5

COMPARISON OF CAREER LADDER DOCUMENTS TO SURVEY DATA

AFR 39-1 Specialty Descriptions

The AFR 39-1 Specialty Descriptions for the 32854/32834 AFSCs and the 32874 AFSC, dated 15 September 1977, were compared to the survey data. Both specialty descriptions accurately portrayed the major duties and responsibilities of personnel working in these AFSCs. The AFR 39-1 Specialty Description for the 32894 AFSC also covered the jobs performed by 9-skill level survey respondents.

Specialty Training Standard (STS)

A review of STS 328X4, dated 2 July 1975, was made by comparing STS items to survey data. Subject-matter specialists at the Technical Training Center, Keesler AFB, MS, matched inventory tasks to specific STS paragraphs. Those paragraphs involving knowledge requirements or general subjects not specifically unique to this career ladder were not evaluated.

Overall, the STS appears to cover the technical tasks which are characteristic of this ladder. In paragraph 9, Organizational Maintenance, all items except those relating to safety precautions (9a), operating aircraft switches (9b), and adjusting aircraft switches (9h) could be directly related to task statements. In each case, 50 percent or more of the survey respondents performed related tasks.

In paragraph 10, Intermediate Level Shop Maintenance, most of the items of a general nature (not related to one specific system) were performed by over 35 percent of the survey respondents. Exceptions to this trend included items pertaining to modifying equipment (10k), which showed 18 percent performing, and maintaining installed (built-in) items of peculiar test equipment (10n), which showed 26 percent performing. Items dealing with Forward-Looking/Multi-Mode/Terrain-Following Radar [(10e(1), 10f(1), and 10i(1))] were deleted from the STS in the last revision. However, consideration should be given to inclusion of other systems such as Adverse Weather Aerial Delivery Systems (AWADS); Inertial Reference Systems (IRS); Multi-Mode Radar Systems (M-MRS); and Velocity/Heading Computer Systems (V/HCS). Since this equipment is maintained by small numbers of personnel, they should be annotated in the same manner as those items dealing with AIDS/MADAR and Astro-Inertial Navigation Systems in the current STS.

In paragraph 11, only 21 percent of the total sample indicated performing tasks relating to fungus-proofing electronic navigation equipment (11c). The other items are universally applicable to all maintenance functions and were performed by high percentages of the personnel in this ladder.

SUMMARY OF BACKGROUND INFORMATION

Each USAF Job Inventory contains a background information section in which respondents report information about themselves and their jobs. Background data for the personnel in this ladder are summarized below.

Job Interest and Utilization of Talents and Training

Table 14 reflects job interest, perceived utilization of talents and training, and reenlistment intentions for the total sample and for personnel within the various periods of Active Federal Military Service. Job interest varied from a low of 56 percent for personnel in their second enlistment to a high of 79 percent for personnel in the sixth enlistment group (240+ months AFMS) who found their job interesting. The slightly lower job interest of respondents to this survey, as compared to the average of other similar career ladders surveyed in 1977, does not appear to be a major difference except for second enlistment personnel. Of the 309 respondents in this group, only 56 percent found their job interesting. This is 16 percentage points below the average for second term airmen in other career fields surveyed in 1977. Similar trends were also found in perceived utilization of talents and training. Reenlistment intentions were also considerably below those for other specialties surveyed in 1977. Reasons for these trends were not evident in the survey data

Type of Organization Assigned

As shown in Table 15, the largest percentage of the total sample (25%) reported that they worked in a tactical fighter organization, with military airlift a close second with 19 percent. The other types of organizations listed in the background section reflected percentages of from five to six percent of the respondents, except for the Flight Test Center with two percent and Weather Reconnaissance with one percent. Eleven percent reported that they worked in types of organizations other than those included in the survey while 13 percent of the respondents failed to respond to this background item. The 1971 results are also included for comparison purposes.

Navigation Systems Maintained

In this career ladder, personnel work on a very large variety of equipment. Over 70 different systems were included in the inventory. In addition, a number of equipment items were mentioned by respondents in the write-in section of the report. In view of this diversity of equipment, it is unlikely that personnel in this career field will work on the same equipment from one assignment to another, especially when they change commands or are assigned to organizations with

different missions. There was some equipment, however, that was common to a relatively large percentage of the ladder. Table 16 lists the navigation systems maintained by ten percent or more of the total sample or first enlistment group. For comparison, results of the 1971 survey are also included.

Test Equipment Used

Personnel in this ladder also use a variety of common electronic test equipment in performing the maintenance and repair of navigational equipment. Table 17 shows equipment used by 10 percent or more of all survey respondents. Note that higher percentages of the first term personnel use the more common general electronic equipment while more specialized equipment such as portable programmers (IDNE), synchro-standards, and multi-mode simulators are used by higher percentages of the total sample. Again, the 1971 survey results have been presented for comparison purposes.

Operation of Category II Support Equipment (AGE)

Of the 43 items of AGE equipment included in the inventory, only one, the ASM-272, was not operated by any of the survey respondents. Most of the remaining AGE equipment was operated by very small percentages of the total and first enlistment samples (See Table 18). In addition, 11 percent wrote in other special AGE equipment not included in the inventory.

TABLE 14
EXPRESSION OF JOB INTEREST AND PERCEIVED UTILIZATION OF TALENTS AND TRAINING BY
DAFSC 328X4 TOTAL SAMPLE AND TAFMS GROUPS
(PERCENT RESPONDING)

	TOTAL SAMPLE N=1397	FIRST ENLISTMENT N=527	SECOND ENLISTMENT N=309	THIRD ENLISTMENT N=163	FOURTH ENLISTMENT N=112	FIFTH ENLISTMENT N=142	SIXTH ENLISTMENT N=140
I FIND MY JOB:							
DULL	14	16	19	11	7	9	7
SO-SO	19	19	24	21	20	16	10
INTERESTING	66	64	56	66	73	71	79
NOT REPORTED	1	1	1	2	0	4	4
MY JOB UTILIZES MY TALENTS:							
NOT AT ALL TO VERY LITTLE	26	33	31	24	18	15	13
FAIRLY WELL TO VERY WELL	66	64	64	68	69	73	63
EXCELLENTLY TO PERFECTLY	7	3	4	7	12	9	23
NOT REPORTED	1	0	1	1	1	3	1
MY JOB UTILIZES MY TRAINING:							
NOT AT ALL TO VERY LITTLE	30	37	33	25	28	24	14
FAIRLY WELL TO VERY WELL	61	57	62	68	57	67	64
EXCELLENTLY TO PERFECTLY	8	5	4	6	12	9	21
NOT REPORTED	1	1	1	1	3	0	1
DO YOU PLAN TO REENLIST:							
NO OR PROBABLY NO	46	63	48	12	6	42	52
YES OR PROBABLY YES	52	35	50	86	91	54	47
NOT REPORTED	2	2	2	2	3	4	1

TABLE 15

TYPE OF ORGANIZATION TO WHICH SURVEY RESPONDENTS ARE ASSIGNED
(PERCENT MEMBERS RESPONDING)

<u>TYPE ORGANIZATION</u>	<u>1977 SURVEY</u>		<u>1971 SURVEY</u>	
	<u>TOTAL SAMPLE</u>	<u>1st ENLISTMENT</u>	<u>TOTAL SAMPLE</u>	<u>FIRST DUTY ASSIGNMENT</u>
TACTICAL FIGHTER	25	29	25	24
BOMBARDMENT	6	8	13	22
MILITARY AIRLIFT (STRATEGIC & TACTICAL)	19	16	18	22
AIR REFUELING	5	6	12	17
TACTICAL RECONNAISSANCE	6	8	12	12
FLYING TRAINING	6	7	5	6
STRATEGIC RECONNAISSANCE	6	5	5	4
FLIGHT TEST CENTER	2	2	2	2
WEATHER RECONNAISSANCE	1	*	2	*
OTHER	11	5	7	6
NO RESPONSE	13	14	**	

* LESS THAN ONE PERCENT

** NOT REPORTED IN 71 SURVEY

TABLE 16
NAVIGATION SYSTEMS MAINTAINED BY SURVEY RESPONDENTS
(PERCENT MEMBERS RESPONDING)

SYSTEM MAINTAINED	1977 SURVEY		1971 SURVEY	
	TOTAL SAMPLE	1st ENLISTMENT	TOTAL SAMPLE	FIRST DUTY ASSIGNMENT
DOPPLER NAVIGATION (APN-147)	32	28	27	30
NAVIGATIONAL COMPUTER (ASN-46)	29	37	28	28
NAVIGATIONAL COMPUTER (ASN-35)	28	25	23	27
INERTIAL NAVIGATION (ASN-63)	25	31	20	19
DOPPLER NAVIGATION (APN-81)	22	26	24	32
NAVIGATIONAL COMPUTER (ASN-7)	22	25	22	29
DIGITAL COMPUTER (ANS-24)	19	15	14	14
INERTIAL NAVIGATION (C-5A)	15	9	9	7
DOPPLER NAVIGATION (C-5A)	15	9	8	7
DIGITAL COMPUTER (C-5A)	14	8	9	7
NAVIGATIONAL COMPUTER (ASN-6)	14	16	15	20
DOPPLER NAVIGATION (APN-99)	12	13	16	22
DOPPLER NAVIGATION (APN-89)	9	13	12	21
DOPPLER NAVIGATION (APN-89A)	7	10	11	20
MULTI-MODE FL/TFR (C-5A)	15	9	9	8
INERTIAL NAVIGATION (ASN-56)	11	12	12	12
OTHER INERTIAL NAVIGATION SYSTEMS	11	11	4	*
OTHER SPECIAL SYSTEMS	11	11	15	

* NOT INCLUDED IN 1971 SURVEY RESULTS

TABLE 17
TEST EQUIPMENT USED BY 10% OR MORE OF SURVEY RESPONDENTS
(PERCENT MEMBERS RESPONDING)

TEST EQUIPMENT	1977 SURVEY		1971 SURVEY	
	TOTAL SAMPLE	FIRST ENLISTMENT	TOTAL SAMPLE	FIRST DUTY ASSIGNMENT
MULTIMETERS	84	95	85	93
OSCILLOSCOPES	81	92	78	86
SIGNAL GENERATORS	74	83	68	78
FREQUENCY COUNTERS	72	79	63	73
DIGITAL VOLTMETERS	70	77	54	59
VACUUM-TUBE VOLTMETERS	66	74	67	77
DIFFERENTIAL VOLTMETERS	62	66	54	38
DOPPLER SIMULATORS	52	55	52	61
SPECTRUM ANALYZERS	51	51	53	62
POWER SUPPLIES	49	51	42	41
FREQUENCY METERS	45	47	39	44
POWER METERS	38	38	39	43
TUBE TESTER	37	39	42	49
SANBORN RECORDERS	34	41	27	25
CRYSTAL CHECKER	26	24	*	*
LOAD SIMULATORS	25	30	30	38
PORTABLE PROGRAMMERS (IDNE)	19	13	10	9
STANDING WAVE INDICATOR	19	19	20	23
SYNCHRO-STANDARDS	16	11	20	15
TRANSISTOR TESTORS	14	11	17	12
DECade DIVIDERS	14	10	7	9
MULTI-MODE SIMULATORS	13	10	10	9

* NOT INCLUDED IN 1971 SURVEY

TABLE 18

CATEGORY II SUPPORT EQUIPMENT (AGE) OPERATED BY 10% OR
MORE OF THE SURVEY RESPONDENTS
(PERCENT MEMBERS RESPONDING)

<u>CATEGORY II SUPPORT EQUIPMENT (AGE)</u>	<u>TOTAL SAMPLE</u>	<u>FIRST ENLISTMENT</u>
UPM-35	22	25
ASM-208	21	25
ASM-194	19	23
ASM-296	18	22
SYSTEM PERFORMANCE TEST SETS	17	21
DYNAMIC RELEASE TEST SETS	15	19
ASM-246	15	18
ASM-247	14	18
ASM-194A	12	12
OTHER	11	13

COMPARISON TO PREVIOUS SURVEY

The results of this survey have been compared to those of the previous survey (Aircraft Inertial and Radar Navigation Systems Repair Career Ladder, AFS 301X4, published on 1 April 1971).

Very few changes have occurred in this career ladder since the previous survey. For example, comparison of percent members performing and time spent on tasks by respondents to the 1971 survey were very similar to responses received from the 1977 respondents. To illustrate this, Table 19 displays 10 of the top tasks performed by airmen in the 25-36 month AFMS group of the 1971 survey. These tasks are compared to performance data of members of the same AFMS group in the 1977 survey. As can be seen from the data displayed, there is very little variance in either percent members performing or in the relative time spent on these tasks even though six years had elapsed between the two surveys.

Background Comparisons

Comparisons of background data are shown in the tables accompanying the previous section (SUMMARY OF BACKGROUND INFORMATION). Table 15 showed that there were only slight differences in percentages of respondents assigned to the various types of organizations between the 1971 and the 1977 surveys. Similar percentages of respondents used the same test equipment (See Table 17) and worked on the same navigation systems (See Table 16). Comparisons of job satisfaction indicators such as intentions to reenlist, job interest, and utilization of talents and training reflected that job satisfaction was slightly lower for respondents in the 1977 survey. Reasons for this slight decline were not evident from the data collected.

Comparison of Career Ladder Structure

Analysis of the 1977 data revealed essentially the same career structure as that of the previous study. In both surveys, major clusters were found for supervisors, systems repairmen, and training personnel. In both surveys, a relatively small group of flightline maintenance personnel were found. However, the relatively small number of personnel in these groups (nine percent in the 1971 study and eight percent in the 1977 study) did not indicate a general trend toward specializing on flightline or shop functions across the career ladder. An important finding in this report that was not in the 1971 report is that systems repairmen do tend to cluster on the type of equipment maintained.

TABLE 19

COMPARISON OF TOP TASKS PERFORMED BY AIRMEN IN 25-36 MONTH AFMS GROUP FOR BOTH THE 1971 AND 1977 SURVEYS

TASK	PERCENT MEMBERS PERFORMING		PERCENT TIME SPENT
	1971	1977	
MAKE ENTRIES ON MAINTENANCE DATA COLLECTION RECORD FORMS (AFTO FORM 349)	81.61	82.69	2.54
INSTALL NEW OR REPAIRED INERTIAL OR RADAR SYSTEM UNITS	81.38	83.97	2.37
PERFORM OPERATIONAL TESTS ON INERTIAL OR RADAR NAVIGATION SYSTEMS	82.30	82.05	2.36
REMOVE UNITS OR SUBASSEMBLIES FOR OFF-EQUIPMENT MAINTENANCE	84.14	83.97	2.24
MAKE ENTRIES ON REPAIRABLE ITEM PROCESSING TAGS (AFTO FORM 350)	82.76	85.26	2.21
TEST OPERATION OF REPAIRED UNITS	80.00	85.26	2.21
SAFETY WIRE INSTALLED SYSTEMS EQUIPMENT	82.76	85.26	2.10
TIGHTEN LOOSE SCREWS, NUTS, OR BOLTS	90.11	92.95	2.08
INSTALL DUST COVERS ON EQUIPMENT	77.70	77.56	2.01
ISOLATE MALFUNCTIONS TO DOPPLER NAVIGATION SYSTEMS (DNS) UNITS	59.08	56.41	2.41
			1.68
			1.37
			1.67
			1.39

ANALYSIS OF COMMAND DIFFERENCES IN UTILIZATION OF 328X4 PERSONNEL

In the career ladder structure analysis, systems repairmen tended to group according to the two major kinds of navigation systems maintained, inertial and Doppler. Also evident in these groups was the fact that personnel specializing in maintenance and repair of inertial navigation systems were primarily in TAC, USAFE, PACAF, and AFSC. Personnel assigned to SAC and MAC typically worked on Doppler navigation systems. Table 20 shows the percent of respondents in each command who reported that they performed specific tasks related to Doppler or inertial systems. Note that 44 percent of the MAC personnel reported that they isolate malfunctions on inertial navigation system (INS) units while approximately 30 percent perform other tasks relating to the INS system. This relatively high percentage reflects personnel who work on aircraft such as the C-5A and a few C-141s that are equipped with navigational systems incorporating both Doppler and inertial equipment.

TABLE 20

COMPARISON OF TASKS RELATED TO MAINTENANCE OF DOPPLER AND INERTIAL NAVIGATION EQUIPMENT BY COMMAND
(PERCENT MEMBERS PERFORMING)

<u>DOPPLER EQUIPMENT TASKS</u>	<u>MAC</u>	<u>SAC</u>	<u>TAC</u>	<u>USAFC</u>	<u>PACAF</u>	<u>ATC</u>	<u>AFSC</u>
F6 ISOLATE MALFUNCTIONS ON DOPPLER NAVIGATION SYSTEM (DNS) UNITS	76	73	24	13	26	52	33
G4 ALIGN OR ADJUST DNS UNITS	49	57	16	9	20	43	20
G20 ISOLATE MALFUNCTIONS TO DNS UNIT SUBASSEMBLIES OR COMPONENTS	47	56	15	9	22	41	17
G39 TEST MINIMUM PERFORMANCE OF DNS UNITS	49	58	15	9	20	43	20
<u>INERTIAL EQUIPMENT TASKS</u>							
F9 ISOLATE MALFUNCTIONS ON INERTIAL NAVIGATION SYSTEM (INS) UNITS	44	16	68	78	57	56	60
G7 ALIGN, OR ADJUST INS UNITS	31	16	63	73	80	56	57
G23 ISOLATE MALFUNCTIONS TO INS UNIT SUBASSEMBLIES OR COMPONENTS	31	15	61	69	66	44	60
G42 TEST MINIMUM PERFORMANCE OF INS UNITS	30	16	62	71	85	50	60

WRITE-IN COMMENTS

In the development of the survey instrument, every effort was made to include all duties and tasks performed by 328X4 personnel. In addition, the background section included lists of specific navigational systems maintained and support or test equipment operated. Due to the possibility of new equipment or omissions in these areas, instruction for completing the inventory urged respondents to write-in any duties, tasks, navigational equipment maintained, or test equipment operated which were not listed in the inventory.

An unusually large number of write-in comments were received in this survey. Over 40 percent of the respondents included one or more write-in comments. Although a few concerned unique assignments which the respondent felt did not fully utilize his training or talents, there were no specific trends indicated by these comments. The vast majority of write-ins were listings of various navigation systems or components maintained or AGE operated. In view of the variety of navigation equipment used in the many kinds of operational missions of the Air Force, and the continual development of these systems and associated avionic test sets, it is almost impossible to maintain a current list of all such equipment for job inventory purposes. In addition, much of the equipment is unique to small operational units. Consequently, although 61 additional items of equipment or test sets were listed in the write-in responses, only those reported by 15 or more respondents are shown below.

<u>ITEM IDENTIFICATION</u>	<u>NUMBER OF WRITE-INS</u>	<u>PERCENT OF SURVEY SAMPLE</u>
AN/ASM-239	67	5
ASQ 91	67	5
LN-20	34	2
LN-15	31	2
ASN-121	24	2
ASW-90	23	2
Carousel IV PINS	22	2
ASN-99	18	1
APQ-122(V)8	15	1

DISCUSSION

In the analysis of the survey data, it was found that there were major divisions in the work performed by members of this ladder. Personnel assigned to MAC and SAC tended to specialize on Doppler navigation equipment while personnel in TAC and USAFE primarily maintained inertial navigation systems. Although there were some personnel who, due to the type of aircraft (the C-5 and some C-141s), perform tasks relative to both systems, they were in the minority. If these personnel were removed from the MAC-SAC sample, the remainder would show maintenance of Doppler systems almost exclusively.

This division of work raises two questions: (1) Does the current career structure provide for proper identification and assignment of personnel to Air Force jobs or are separate ladders or shreds justified based on this division of work; and (2) Is current training cost-effective?

In view of the large number of common tasks and the application of electronic and navigation principles common to both navigation systems, the present structure appears to be satisfactory. Contacts with several field personnel indicated that transfer from one system to another is not a major problem at the present time since personnel had received formal training on both Doppler and inertial systems.

Training on both inertial and Doppler systems may not be completely cost-effective, however, since most first term airmen presently work on one or the other of these systems but only a few work on both. Further, only 40 percent intend to remain in the Air Force after their initial four years. Thus, formal training could probably be made more cost-effective by identifying which system an individual will work on during the first enlistment or assignment and providing training only on that one system.

Discussion with technicians in the field suggests that over the next few years, inertial equipment may be added to some Doppler-equipped aircraft. This complicates any attempt to channelize training since more incumbents may be required to work on both systems. Thus, before any decision can be made on channelizing training some determination of the future demands on first term specialists need to be made.

APPENDIX A

GROUP ID NUMBER AND TITLE: GRP050 - AVIONICS STAFF PERSONNEL

JDI: 11.02

NUMBER IN GROUP: 17

PERCENT OF SAMPLE: 1%

MAJOR COMMAND DISTRIBUTION: TAC (41%), USAFE (18%), OTHER (41%)

LOCATION: CONUS (65%), OVERSEAS (35%)

DAFSC DISTRIBUTION: 32854 (6%), 32874 (47%), 32894 (47%)

AVERAGE GRADE: 7

AVERAGE TIME IN CAREER FIELD: 196 months

AVERAGE TIME IN SERVICE: 224 months

PERCENT MEMBERS IN FIRST ENLISTMENT: NONE

AMOUNT OF SUPERVISION: 41 PERCENT SUPERVISE AN AVERAGE OF THREE SUBORDINATES

EXPRESSED JOB INTEREST: DULL (6%), SO-SO (24%), INTERESTING (58%), NO REPLY (12%)

PERCEIVED UTILIZATION OF TALENTS: LITTLE OR NOT AT ALL (18%)
FAIRLY WELL OR BETTER (76%)
NO REPLY (6%)

PERCEIVED UTILIZATION OF TRAINING: LITTLE OR NOT AT ALL (41%)
FAIRLY WELL OR BETTER (59%)

AVERAGE NUMBER OF TASKS PERFORMED: 21

TIME SPENT ON DUTIES:

<u>DUTY</u>	<u>AVERAGE TIME SPENT BY ALL MEMBERS</u>
B DIRECTING AND IMPLEMENTING	37
C INSPECTING AND EVALUATING	31
A ORGANIZING AND PLANNING	17
I PERFORMING MAINTENANCE MANAGEMENT FUNCTIONS	8
E INSPECTING ELECTRONIC NAVIGATION SYSTEMS	5

GROUP DIFFERENTIATING TASKS:

TASKS

- B12 DRAFT OR EDIT CORRESPONDENCE
- B2 CONDUCT OR PARTICIPATE IN STAFF MEETINGS
- B24 INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES
- C3 EVALUATE ADMINISTRATIVE FORMS, FILES, OR PROCEDURES
- C13 EVALUATE MAINTENANCE DATA COLLECTION SYSTEMS

GROUP ID NUMBER AND TITLE: GRP037 - SUPERINTENDENTS

JDI: 15.99

NUMBER IN GROUP: 185

PERCENT OF SAMPLE: 13%

MAJOR COMMAND DISTRIBUTION: SAC (28%), TAC (27%), MAC (23%), USAFE (12%),
OTHER (10%)

LOCATION: CONUS (73%), OVERSEAS (27%)

DAFSC DISTRIBUTION: 32854 (2%), 32874 (29%), 32894 (67%), NO REPLY (2%)

AVERAGE GRADE: 7.3

AVERAGE TIME IN CAREER FIELD: 198 months

AVERAGE TIME IN SERVICE: 246 months

PERCENT MEMBERS IN FIRST ENLISTMENT: NONE

AMOUNT OF SUPERVISION: 85 PERCENT SUPERVISE AN AVERAGE OF SIX SUBORDINATES

EXPRESSED JOB INTEREST: DULL (6%), SO-SO (9%), INTERESTING (82%), NO REPLY (3%)

PERCEIVED UTILIZATION OF TALENTS: LITTLE OR NOT AT ALL (10%)
FAIRLY WELL OR BETTER (88%)
NO REPLY (2%)

PERCEIVED UTILIZATION OF TRAINING: LITTLE OR NOT AT ALL (16%)
FAIRLY WELL OR BETTER (84%)

AVERAGE NUMBER OF TASKS PERFORMED: 74

TIME SPENT ON DUTIES:

<u>DUTY</u>	<u>AVERAGE TIME SPENT BY ALL MEMBERS</u>
B DIRECTING AND IMPLEMENTING	29
C INSPECTING AND EVALUATING	24
A ORGANIZING AND PLANNING	14
I PERFORMING MAINTENANCE MANAGEMENT FUNCTIONS	10
E INSPECTING ELECTRONIC NAVIGATION SYSTEMS	9
D TRAINING	7

GROUP DIFFERENTIATING TASKS:

TASKS

- A1 ASSIGN PERSONNEL TO DUTY POSITIONS
- B1 BRIEF PERSONNEL ON MAINTENANCE MANAGEMENT DIRECTIVES OR PROCEDURES
- B25 INTERVIEW NEWLY ASSIGNED PERSONNEL
- C12 EVALUATE MAINTENANCE OR USE OF WORKSPACE, EQUIPMENT, OR SUPPLIES
- C2 CONDUCT SAFETY INSPECTIONS

GROUP ID NUMBER AND TITLE: GRP129 - SYSTEMS REPAIR

JDI: 12.46

NUMBER IN GROUP: 745

PERCENT OF SAMPLE: 53%

MAJOR COMMAND DISTRIBUTION: MAC (27%), TAC (26%), SAC (24%), USAFE (14%),
OTHER (9%)

LOCATION: CONUS (73%), OVERSEAS (27%)

DAFSC DISTRIBUTION: 32834 (9%), 32854 (78%), 32874 (13%)

AVERAGE GRADE: 4.0

AVERAGE TIME IN CAREER FIELD: 47 months

AVERAGE TIME IN SERVICE: 58 months

PERCENT MEMBERS IN FIRST ENLISTMENT: 56%

AMOUNT OF SUPERVISION: 29 PERCENT SUPERVISE AN AVERAGE OF TWO SUBORDINATES

EXPRESSED JOB INTEREST: DULL (15%), SO-SO (21%), INTERESTING (63%), NO REPLY (1%)

PERCEIVED UTILIZATION OF TALENTS: LITTLE OR NOT AT ALL (29%)
FAIRLY WELL OR BETTER (71%)

PERCEIVED UTILIZATION OF TRAINING: LITTLE OR NOT AT ALL (31%)
FAIRLY WELL OR BETTER (68%)
NO REPLY (1%)

AVERAGE NUMBER OF TASKS PERFORMED: 65

TIME SPENT ON DUTIES:

<u>DUTY</u>	<u>AVERAGE TIME SPENT BY ALL MEMBERS</u>
G PERFORMING OFF-EQUIPMENT MAINTENANCE	29
F MAINTAINING ON-EQUIPMENT ELECTRONIC NAVIGATION SYSTEMS	24
H PERFORMING PREVENTIVE MAINTENANCE FUNCTIONS	17
I PERFORMING MAINTENANCE MANAGEMENT FUNCTIONS	16
E INSPECTING ELECTRONIC NAVIGATION SYSTEMS	4

GROUP DIFFERENTIATING TASKS:

TASKS

- H15 TIGHTEN SCREWS, NUTS, OR BOLTS
- G49 TEST OPERATION OF NEW OR REPAIRED UNITS
- H1 CLEAN OR DUST EQUIPMENT OR COMPONENTS
- G33 REMOVE OR INSTALL ELECTRONIC COMPONENTS, PARTS, OR ASSEMBLIES
- H7 LOCATE MAINTENANCE INFORMATION IN TECHNICAL PUBLICATIONS
- I21 MAKE ENTRIES ON REPARABLE ITEM PROCESSING TAG FORMS (AFTO FORM 350)

GROUP ID NUMBER AND TITLE: GRP289 - INERTIAL NAVIGATION SYSTEMS REPAIRMEN

JDI: 12.79

NUMBER IN GROUP: 285

PERCENT OF SAMPLE: 20%

MAJOR COMMAND DISTRIBUTION: TAC (53%), USAFE (31%), OTHER (16%)

LOCATION: CONUS (60%), OVERSEAS (40%)

DAFSC DISTRIBUTION: 32834 (10%), 32854 (82%), 32874 (8%)

AVERAGE GRADE: 3.9

AVERAGE TIME IN CAREER FIELD: 43 months

AVERAGE TIME IN SERVICE: 53 months

PERCENT MEMBERS IN FIRST ENLISTMENT: 62%

AMOUNT OF SUPERVISION: 28 PERCENT SUPERVISE AN AVERAGE OF TWO SUBORDINATES

EXPRESSED JOB INTEREST: DULL (16%), SO-SO (19%), INTERESTING (64%), NO REPLY (1%)

PERCEIVED UTILIZATION OF TALENTS: LITTLE OR NOT AT ALL (30%)
FAIRLY WELL OR BETTER (70%)

PERCEIVED UTILIZATION OF TRAINING: LITTLE OR NOT AT ALL (31%)
FAIRLY WELL OR BETTER (68%)
NO REPLY (1%)

AVERAGE NUMBER OF TASKS PERFORMED: 69

TIME SPENT ON DUTIES:

<u>DUTY</u>	<u>AVERAGE TIME SPENT BY ALL MEMBERS</u>
F MAINTAINING ON-EQUIPMENT ELECTRONIC NAVIGATION SYSTEMS	27
G PERFORMING OFF-EQUIPMENT MAINTENANCE	26
H PERFORMING PREVENTIVE MAINTENANCE FUNCTIONS	17
I PERFORMING MAINTENANCE MANAGEMENT FUNCTIONS	17
E INSPECTING ELECTRONIC NAVIGATION SYSTEMS	4

GROUP DIFFERENTIATING TASKS:

TASKS

- F9 ISOLATE MALFUNCTIONS ON INERTIAL NAVIGATION SYSTEM (INS) UNITS
- F16 MAKE ADJUSTMENTS ON INSTALLED EQUIPMENT
- F17 OPERATE FLIGHT LINE GENERATOR EQUIPMENT
- F20 PERFORM OPERATIONAL TESTS ON INERTIAL OR RADAR NAVIGATION SYSTEMS
- G23 ISOLATE MALFUNCTIONS TO INS UNIT SUBASSEMBLIES OR COMPONENTS
- G42 TEST MINIMUM PERFORMANCE OF INS UNITS

GROUP ID NUMBER AND TITLE: GRP239 - EXPERIENCED DOPPLER NAVIGATION SYSTEMS REPAIRMEN

JDI: 13.16

NUMBER IN GROUP: 337

PERCENT OF SAMPLE: 24%

MAJOR COMMAND DISTRIBUTION: MAC (45%), SAC (41%), OTHER (14%)

LOCATION: CONUS (82%), OVERSEAS (18%)

DAFSC DISTRIBUTION: 32834 (6%), 32854 (77%), 32874 (17%)

AVERAGE GRADE: 4.1

AVERAGE TIME IN CAREER FIELD: 52 months

AVERAGE TIME IN SERVICE: 65 months

PERCENT MEMBERS IN FIRST ENLISTMENT: 48%

AMOUNT OF SUPERVISION: 31 PERCENT SUPERVISE AN AVERAGE OF THREE SUBORDINATES

EXPRESSED JOB INTEREST: DULL (13%), SO-SO (22%), INTERESTING (64%), NO REPLY (1%)

PERCEIVED UTILIZATION OF TALENTS: LITTLE OR NOT AT ALL (24%)
FAIRLY WELL OR BETTER (75%)
NO REPLY (1%)

PERCEIVED UTILIZATION OF TRAINING: LITTLE OR NOT AT ALL (29%)
FAIRLY WELL OR BETTER (71%)

AVERAGE NUMBER OF TASKS PERFORMED: 69

TIME SPENT ON DUTIES:

<u>DUTY</u>	<u>AVERAGE TIME SPENT BY ALL MEMBERS</u>
G PERFORMING OFF-EQUIPMENT MAINTENANCE	30
F MAINTAINING ON-EQUIPMENT ELECTRONIC NAVIGATION SYSTEMS	23
H PERFORMING PREVENTIVE MAINTENANCE FUNCTIONS	17
I PERFORMING MAINTENANCE MANAGEMENT FUNCTIONS	15
E INSPECTING ELECTRONIC NAVIGATION SYSTEMS	4

GROUP DIFFERENTIATING TASKS:

TASKS

- F6 ISOLATE MALFUNCTIONS ON DOPPLER NAVIGATION SYSTEM (DNS) UNITS
- F16 MAKE ADJUSTMENTS ON INSTALLED EQUIPMENT
- G4 ALIGN, OR ADJUST DNS UNITS
- G20 ISOLATE MALFUNCTIONS TO DNS UNIT SUBASSEMBLIES OR COMPONENTS
- G26 ISOLATE MALFUNCTIONS TO NCS UNIT SUBASSEMBLIES OR COMPONENTS
- G39 TEST MINIMUM PERFORMANCE OF DNS UNITS

GROUP ID NUMBER AND TITLE: GRP197 - DOPPLER NAVIGATION SYSTEMS REPAIRMEN

JDI: 7.99

NUMBER IN GROUP: 55

PERCENT OF SAMPLE: 4%

MAJOR COMMAND DISTRIBUTION: SAC (51%), MAC (22%), TAC (22%), OTHER (5%)

LOCATION: CONUS (89%), OVERSEAS (11%)

DAFSC DISTRIBUTION: 32834 (29%), 32854 (66%), 32874 (5%)

AVERAGE GRADE: 3.5

AVERAGE TIME IN CAREER FIELD: 30 months

AVERAGE TIME IN SERVICE: 36 months

PERCENT MEMBERS IN FIRST ENLISTMENT: 84%

AMOUNT OF SUPERVISION: 11 PERCENT SUPERVISE AN AVERAGE OF TWO SUBORDINATES

EXPRESSED JOB INTEREST: DULL (14%), SO-SO (26%), INTERESTING (60%)

PERCEIVED UTILIZATION OF TALENTS: LITTLE OR NOT AT ALL (38%)
FAIRLY WELL OR BETTER (62%)

PERCEIVED UTILIZATION OF TRAINING: LITTLE OR NOT AT ALL (49%)
FAIRLY WELL OR BETTER (49%)
NO REPLY (2%)

AVERAGE NUMBER OF TASKS PERFORMED: 41

TIME SPENT ON DUTIES:

<u>DUTY</u>	<u>AVERAGE TIME SPENT BY ALL MEMBERS</u>
G PERFORMING OFF-EQUIPMENT MAINTENANCE	31
F MAINTAINING ON-EQUIPMENT ELECTRONIC NAVIGATION SYSTEMS	25
H PERFORMING PREVENTIVE MAINTENANCE FUNCTIONS	20
I PERFORMING MAINTENANCE MANAGEMENT FUNCTIONS	16
E INSPECTING ELECTRONIC NAVIGATION SYSTEMS	4

GROUP DIFFERENTIATING TASKS:

TASKS

- F6 ISOLATE MALFUNCTIONS ON DOPPLER NAVIGATION SYSTEM (DNS) UNITS
- F26 REMOVE UNITS OR SUBASSEMBLIES FOR OFF-EQUIPMENT MAINTENANCE
- G33 REMOVE OR INSTALL ELECTRONIC COMPONENTS, PARTS, OR ASSEMBLIES
- G35 SOLDER COMPONENTS
- G49 TEST OPERATION OF NEW OR REPAIRED UNITS

GROUP ID NUMBER AND TITLE: GRP238 - ADVERSE WEATHER AERIAL DELIVERY SYSTEMS (AWADS)
REPAIRMEN

JD1: 11.92

NUMBER IN GROUP: 9

PERCENT OF SAMPLE: LESS THAN 1%

MAJOR COMMAND DISTRIBUTION: MAC (100%)

LOCATION: CONUS (100%)

DAFSC DISTRIBUTION: 32854 (100%)

AVERAGE GRADE: 3.6

AVERAGE TIME IN CAREER FIELD: 25 months

AVERAGE TIME IN SERVICE: 35 months

PERCENT MEMBERS IN FIRST ENLISTMENT: 67%

AMOUNT OF SUPERVISION: 33 PERCENT SUPERVISE AN AVERAGE OF ONE SUBORDINATES

EXPRESSED JOB INTEREST: DULL (11%), SO-SO (22%), INTERESTING (67%)

PERCEIVED UTILIZATION OF TALENTS: LITTLE OR NOT AT ALL (22%)
FAIRLY WELL OR BETTER (78%)

PERCEIVED UTILIZATION OF TRAINING: LITTLE OR NOT AT ALL (22%)
FAIRLY WELL OR BETTER (78%)

AVERAGE NUMBER OF TASKS PERFORMED: 56

TIME SPENT ON DUTIES:

<u>DUTY</u>	<u>AVERAGE TIME SPENT BY ALL MEMBERS</u>
G PERFORMING OFF-EQUIPMENT MAINTENANCE	30
F MAINTAINING ON-EQUIPMENT ELECTRONIC NAVIGATION SYSTEMS	22
H PERFORMING PREVENTIVE MAINTENANCE FUNCTIONS	17
I PERFORMING MAINTENANCE MANAGEMENT FUNCTIONS	17
B DIRECTING AND IMPLEMENTING	4
E INSPECTING ELECTRONIC NAVIGATION SYSTEMS	4

GROUP DIFFERENTIATING TASKS:

TASKS

- G38 TEST MINIMUM PERFORMANCE OF AWADS UNITS
- G17 ISOLATE malfunctions TO AWADS UNIT SUBASSEMBLIES OR COMPONENTS
- G3 ALIGN, OR ADJUST AWADS UNITS
- F22 PROGRAM COMPUTERS
- F17 OPERATE FLIGHT LINE GENERATOR EQUIPMENT
- G16 INSTALL SOLDERLESS CONNECTIONS

GROUP ID NUMBER AND TITLE: GRP146 - INERTIAL NAVIGATION SHOP REPAIRMEN

JDI: 10.33

NUMBER IN GROUP: 36

PERCENT OF SAMPLE: 3%

MAJOR COMMAND DISTRIBUTION: PACAF (47%), MAC (33%), USAFE (14%), TAC (6%)

LOCATION: CONUS (39%), OVERSEAS (58%), NO REPLY (3%)

DAFSC DISTRIBUTION: 32834 (3%), 32854 (78%), 32874 (19%)

AVERAGE GRADE: 4.2

AVERAGE TIME IN CAREER FIELD: 53 months

AVERAGE TIME IN SERVICE: 63 months

PERCENT MEMBERS IN FIRST ENLISTMENT: 42%

AMOUNT OF SUPERVISION: 31 PERCENT SUPERVISE AN AVERAGE OF TWO SUBORDINATES

EXPRESSED JOB INTEREST: DULL (8%), SO-SO (31%), INTERESTING (58%), NO REPLY (3%)

PERCEIVED UTILIZATION OF TALENTS: LITTLE OR NOT AT ALL (28%)
FAIRLY WELL OR BETTER (69%)
NO REPLY (3%)

PERCEIVED UTILIZATION OF TRAINING: LITTLE OR NOT AT ALL (25%)
FAIRLY WELL OR BETTER (72%)
NO REPLY (3%)

AVERAGE NUMBER OF TASKS PERFORMED: 48

TIME SPENT ON DUTIES:

<u>DUTY</u>	<u>AVERAGE TIME SPENT BY ALL MEMBERS</u>
G PERFORMING OFF-EQUIPMENT MAINTENANCE	40
H PERFORMING PREVENTIVE MAINTENANCE FUNCTIONS	24
I PERFORMING MAINTENANCE MANAGEMENT FUNCTIONS	17
F MAINTAINING ON-EQUIPMENT ELECTRONIC NAVIGATION SYSTEMS	5
E INSPECTING ELECTRONIC NAVIGATION SYSTEMS	5

GROUP DIFFERENTIATING TASKS:

TASKS

- G7 ALIGN, OR ADJUST INS UNITS
- G42 TEST MINIMUM PERFORMANCE OF INS UNITS
- G49 TEST OPERATION OF NEW OR REPAIRED UNITS
- H13 PERFORM PREVENTIVE MAINTENANCE INSPECTIONS ON INERTIAL OR RADAR NAVIGATION SYSTEMS (INS/RNS)

GROUP ID NUMBER AND TITLE: GRP130 - INTERMEDIATE SUPERVISORS

JDI: 18.57

NUMBER IN GROUP: 186

PERCENT OF SAMPLE: 13%

MAJOR COMMAND DISTRIBUTION: MAC (26%), SAC (24%), TAC (19%), USAFE (11%),
PACAF (7%), OTHER (14%)

LOCATION: CONUS (71%), OVERSEAS (29%)

DAFSC DISTRIBUTION: 32854 (25%), 32874 (71%), 32894 (3%), NO REPLY (1%)

AVERAGE GRADE: 5.6

AVERAGE TIME IN CAREER FIELD: 111 months

AVERAGE TIME IN SERVICE: 157 months

PERCENT MEMBERS IN FIRST ENLISTMENT: 3%

AMOUNT OF SUPERVISION: 90 PERCENT SUPERVISE AN AVERAGE OF FIVE SUBORDINATES

EXPRESSED JOB INTEREST: DULL (9%), SO-SO (17%), INTERESTING (73%), NO REPLY (1%)

PERCEIVED UTILIZATION OF TALENTS: LITTLE OR NOT AT ALL (17%)
FAIRLY WELL OR BETTER (83%)

PERCEIVED UTILIZATION OF TRAINING: LITTLE OR NOT AT ALL (22%)
FAIRLY WELL OR BETTER (76%)
NO REPLY (2%)

AVERAGE NUMBER OF TASKS PERFORMED: 121

TIME SPENT ON DUTIES:

DUTY	AVERAGE TIME SPENT BY ALL MEMBERS
G PERFORMING OFF-EQUIPMENT MAINTENANCE	19
I PERFORMING MAINTENANCE MANAGEMENT FUNCTIONS	16
B DIRECTING AND IMPLEMENTING	14
F MAINTAINING ON-EQUIPMENT ELECTRONIC NAVIGATION SYSTEMS	13
H PERFORMING PREVENTIVE MAINTENANCE FUNCTIONS	10
C INSPECTING AND EVALUATING	9

GROUP DIFFERENTIATING TASKS:

TASKS

- B10 DIRECT SHOP MAINTENANCE ACTIVITIES
- B27 SUPERVISE AVIONIC INERTIAL AND RADAR NAVIGATION SYSTEMS SPECIALISTS
(AFSC 32854)
- C22 WRITE AIRMAN PERFORMANCE REPORTS (APR)
- I17 MAKE ENTRIES ON MAINTENANCE DATA COLLECTION RECORD FORMS (AFTO FORM 349)
- H7 LOCATE MAINTENANCE INFORMATION IN TECHNICAL PUBLICATIONS
- G49 TEST OPERATION OF NEW OR REPAIRED UNITS

GROUP ID NUMBER AND TITLE: GRP080 - FLIGHTLINE MAINTENANCE PERSONNEL

JDI: 977

NUMBER IN GROUP: 112

PERCENT OF SAMPLE: 8%

MAJOR COMMAND DISTRIBUTION: MAC (45%), TAC (30%), USAFE (15%), OTHER (10%)

LOCATION: CONUS (62%), OVERSEAS (38%)

DAFSC DISTRIBUTION: 32834 (6%), 32854 (82%), 32874 (12%)

AVERAGE GRADE: 4.0

AVERAGE TIME IN CAREER FIELD: 45 Months

AVERAGE TIME IN SERVICE: 61 Months

PERCENT MEMBERS IN FIRST ENLISTMENT: 55%

AMOUNT OF SUPERVISION: 20 PERCENT SUPERVISE AN AVERAGE OF THREE SUBORDINATES

EXPRESSED JOB INTEREST: DULL (15%), SO-SO (28%), INTERESTING (55%), NO REPLY (2%)

PERCEIVED UTILIZATION OF TALENTS: LITTLE OR NOT AT ALL (39%)
FAIRLY WELL OR BETTER (61%)

PERCEIVED UTILIZATION OF TRAINING: LITTLE OR NOT AT ALL (53%)
FAIRLY WELL OR BETTER (47%)

AVERAGE NUMBER OF TASKS PERFORMED: 39

TIME SPENT ON DUTIES:

<u>DUTY</u>	<u>AVERAGE TIME SPENT BY ALL MEMBERS</u>
F MAINTAINING ON-EQUIPMENT ELECTRONIC NAVIGATION SYSTEMS	45
G PERFORMING OFF-EQUIPMENT MAINTENANCE	17
I PERFORMING MAINTENANCE MANAGEMENT FUNCTIONS	14
H PERFORMING PREVENTIVE MAINTENANCE FUNCTIONS	12
E INSPECTING ELECTRONIC NAVIGATION SYSTEMS	4

GROUP DIFFERENTIATING TASKS:

TASKS

- H15 TIGHTEN SCREWS, NUTS, OR BOLTS
- G49 TEST OPERATION OF NEW OR REPAIRED UNITS
- H1 CLEAN OR DUST EQUIPMENT OR COMPONENTS
- G33 REMOVE OR INSTALL ELECTRONIC COMPONENTS, PARTS, OR ASSEMBLIES
- H7 LOCATE MAINTENANCE INFORMATION IN TECHNICAL PUBLICATIONS
- I21 MAKE ENTRIES ON REPARABLE ITEM PROCESSING TAG FORMS (AFTO FORM 350)

GROUP ID NUMBER AND TITLE: GRP047 - TRAINING PERSONNEL

JKI: 13.47

NUMBER IN GROUP: 27

PERCENT OF SAMPLE: 2%

MAJOR COMMAND DISTRIBUTION: ATC (85%), TAC (7%), MAC (4%), OTHER (4%)

LOCATION: CONUS (96%), OVERSEAS (4%)

DAFSC DISTRIBUTION: 32834 (4%), 32854 (18%), 32874 (74%), 32894 (4%)

AVERAGE GRADE: 5.8

AVERAGE TIME IN CAREER FIELD: 129 Months

AVERAGE TIME IN SERVICE: 172 Months

PERCENT MEMBERS IN FIRST ENLISTMENT: 4%

AMOUNT OF SUPERVISION: 22 PERCENT SUPERVISE AN AVERAGE OF FIVE SUBORDINATES

EXPRESSED JOB INTEREST: SO-SO (11%), INTERESTING (89%)

PERCEIVED UTILIZATION OF TALENTS: LITTLE OR NOT AT ALL (0%)
FAIRLY WELL OR BETTER (100%)

PERCEIVED UTILIZATION OF TRAINING: LITTLE OR NOT AT ALL (7%)
FAIRLY WELL OR BETTER (89%)
NO REPLY (4%)

AVERAGE NUMBER OF TASKS PERFORMED: 46

TIME SPENT ON DUTIES:

<u>DUTY</u>	<u>AVERAGE TIME SPENT BY ALL MEMBERS</u>
D TRAINING	46
G PERFORMING OFF-EQUIPMENT MAINTENANCE	12
B DIRECTING AND IMPLEMENTING	10
I PERFORMING MAINTENANCE MANAGEMENT FUNCTIONS	8
F MAINTAINING ON-EQUIPMENT ELECTRONIC NAVIGATION SYSTEMS	7
H PERFORMING PREVENTIVE MAINTENANCE FUNCTIONS	7

GROUP DIFFERENTIATING TASKS:

TASKS

- D4 CONDUCT TRAINING COURSES
- D7 DEVELOP COURSE CURRICULA, PLANS OF INSTRUCTION (POI), OR SPECIALTY TRAINING STANDARDS (STS)
- D1 ADMINISTER OR SCORE TESTS
- D6 DEMONSTRATE PROCEDURES FOR LOCATING TECHNICAL INFORMATION
- D12 EVALUATE TRAINING METHODS, TECHNIQUES, OR PROGRAMS